Maine and Vermont
Organic Spring Wheat Variety Trial Results
2010-2013

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Bread wheat is a new crop option for farmers in New England due to increasing consumer demand for locally grown food. In 2010, the University of Maine and University of Vermont began a series of trials evaluating varieties of hard red wheat to identify those that perform well in Northern New England under organic production. This publication presents results for spring wheat varieties tested from 2010 through 2013. Separate publications of prior years' full results for both spring and winter wheat variety trials are available online at www.umaine.edu/localwheat.

This collaborative work was funded by a grant from the USDA Organic Agriculture Research and Extension Initiative to improve bread wheat production in our region.

TRIAL DESIGN AND VARIETIES

Trials were established each year at four locations in Northern New England: Alburgh, VT; Old Town or Presque Isle, ME; Sidney, ME; and Willsboro, NY. The experimental design was a randomized complete block with four replications, which means that each variety was planted in four separate plots at each location. All of the varieties evaluated from 2010 to 2013 are listed in Table 1 (Tables begin on page 10). Over the course of the trials, some varieties were added as new ones became available and some varieties were removed if they were found to be unsuitable for our region (ex., highly susceptible to Fusarium head blight) or for bread flour markets (ex., low grain protein levels). The results for varieties that were dropped from our trials can be found in previous years' reports (see www.umaine.edu/localwheat/research/variety-trials/).

WEATHER CONDITIONS

Seasonal precipitation and temperature were recorded at or near the trial locations. The Alburgh, VT, Old Town, ME, Presque Isle, ME, and Willsboro, NY locations had weather stations in close proximity to the trial sites, while the Sidney, ME location had a weather station within 8 miles. Weather conditions varied greatly from year to year, affecting the overall development and quality of the wheat (Table 2).

In 2010, weather conditions were ideal for growing spring wheat. The spring was warm and dry, with

April and May temperatures well above the 30-year mean and rainfall below normal, allowing for wheat to be planted up to two weeks earlier than what is normal for the region. Except for the month of June, the pattern of above average temperatures and below average rainfall continued through the growing season.

In 2011, weather conditions were more challenging for spring grains due to heavy spring precipitation, especially at the VT and NY sites where rainfall for both April and May was about 5 inches above normal. Planting was delayed at all sites, occurring from May 2 to May 13. Summer temperatures were slightly cooler than normal in ME and slightly warmer than usual at the VT and NY sites. Precipitation levels were normal or slightly below at all sites.

As in 2010, early spring conditions in 2012 were substantially warmer and somewhat drier than usual allowing for early planting (April 6 to April 13). The VT and NY locations also experienced above average temperatures during the middle and later part of the growing season. In ME, precipitation was above average in June prior to and during wheat flowering and conditions were warmer and drier than average during grain fill and harvest.

2013 started off drier than normal allowing for early planting at the VT and NY sites and timely planting in ME. Starting in late May through June, precipitation levels were well above normal. The VT and NY sites received two times the average rainfall for June. July precipitation levels returned to normal at all sites, however, above average levels occurred in August in ME during grain ripening and dry down.

CULTURAL PRACTICES

Trial plots were managed following practices similar to those used by farmers in New England (Table 3).

University of Maine Rogers and Smith Research Farms – Old Town, ME (2010 – 2012) – As soon as weather conditions allowed, the plot areas were moldboard plowed. Prior to planting, solid dairy manure was applied and incorporated on the same day with a Perfecta harrow. The estimated total available nitrogen from the various fertility sources was 70 lbs per acre in 2010 and 2011 and 90 lbs per acre in 2012. The spring wheat varieties were planted using an Almaco cone seeder with 6.5-inch row spacing. The seeding rate was 30 live seeds per square foot in 2010 and 2012 and increased to 51 live seeds per square foot for 2012. These rates correspond to target plant populations of 1.3 and 2 million plants per acre, respectively. When the wheat reached the 3-leaf stage, the plots were tine harrowed with a 10-ft. Lely Weeder (spring tine harrow) if weed seedling numbers were high and field conditions allowed. In 2012, the plots were topdressed with Chilean nitrate at 100 lbs per acre (16 lbs of nitrogen per acre) when the wheat was in the late tillering stage. Wheat grain was harvested using a Wintersteiger Classic plot combine. Harvest area was 4’ x 33’.

University of Maine Presque Isle Research Farm – Presque Isle, ME (2013 only) – The trial area was disk harrowed in early spring and then chicken manure from a broiler operation was spread. The manure was worked in with a Vibrashank seed-bed conditioner. The estimated total available nitrogen from the manure source was 60 lbs per acre. The spring wheat varieties were planted using an Almaco cone

seeder with a 6.5 inch row spacing. The seeding rate was 51 live seeds per square foot, which corresponds to a target population of 2 million plants per acre. The plots were tine harrowed using a Lely Weeder when the wheat was at the 3-leaf stage. A Wintersteiger Classic plot combine was used to harvest the plots. Harvest area was 4' x 33'.

Rainbow Valley Farm - Sidney, ME – Field preparation at this site was similar to the Old Town site except liquid dairy manure was used in 2010 and 2011, and manure incorporation and seedbed preparation were accomplished with two passes of a disc harrow followed by a pass of either a cultivator packer, a spring-tooth harrow, or a C-shank chisel harrow. The estimated total available nitrogen from the manure sources were 70 lbs per acre in 2010 and 2011, 55 lbs per acre in 2012, and 78 lbs per acre in 2013. Spring wheat was planted using an Almaco cone seeder with a 6.5 inch row spacing. The seeding rate was 30 live seeds per square foot in 2010 and 2012 and increased to 51 live seeds per square foot for 2012 and 2013. Weeds were managed with one pass of a LELY Weeder tine weeder in 2010 and 2012. A Wintersteiger Classic plot combine was used to harvest the plots. Harvest area was 4' x 33'.

Borderview Research Farm - Alburgh, VT – For the 2010 and 2012 trials, the plot areas were plowed the prior fall to kill and incorporate a perennial forage stand, and in the spring, they were disked and spike-tooth harrowed before planting. The estimated nitrogen availability from the sod plow down was 65-75 lbs per acre. In 2011, the fertility source was poultry manure applied at a rate to supply an estimated 70 lbs per acre of available nitrogen. In 2013, no pre-plant fertility was applied following a prior corn crop. In 2011 and 2013, field preparation consisted of one pass each of a disk and a spike-tooth harrow. In all years, wheat was seeded using an eight-row Kincaid Cone Seeder with 6-inch row spacing at a rate of 33 live seeds per square foot, equivalent to a target population of 1.4 million plants per acre. When needed, plots were tine weeded with a 12 ft. Kovar Tine Weeder. Wheat was harvested using an Almaco SPC50 plot combine. Harvest area was 5' x 20'.

Willsboro Research Farm - Willsboro, NY – The fields used for the 2010 and 2011 trials were fall plowed. In 2010, the field was dragged twice in the fall to eliminate remaining alfalfa and perennial grasses. In April of each year, the fields were disked and spike-tooth harrowed before planting. Estimated nitrogen availability from the various fertility sources was 65-75 lbs per acre. Wheat was seeded using a custom eight-row cone seeder with 6-inch row spacing at a rate of 33 live seeds per square foot. The plots were harvested with a Hege plot combine. Harvest area was 4' x 13'.

MEASUREMENTS AND METHODS

Flowering date was recorded for each variety where possible. Plant heights were measured at each site at the peak biomass stage. Prior to harvest, the incidence and severity of lodging was noted for each variety. All varieties were harvested on the same day at each site once the latest maturing variety threshed free in hand tests and weather and logistics allowed. Following harvest, grain was cleaned with a small Clipper cleaner and weights were recorded. Harvest moisture and test weights were determined using DICKEY-john GAC-2100 grain moisture meters.

Subsamples were ground into flour using a Perten LM3100 Laboratory Mill. The ground material was then analyzed for crude protein, falling number, and mycotoxin levels. Protein content was determined using a Perten Inframatic 8600 Flour Analyzer. Most commercial mills target 12-14% protein. Falling number was determined on a Perten FN 1500 Falling Number Machine. The falling number is related to the level of sprout damage that has occurred in the grain due to enzymatic activity. It is measured as the time it takes, in seconds, for a plunger to fall through a slurry of flour and water to the bottom of the tube. Falling numbers less than 200 seconds indicate high enzymatic activity and poor quality wheat. Concentrations of deoxynivalenol (DON), a mycotoxin produced by the fungus that causes Fusarium head blight, were determined using the Veratox DON 2/3 Quantitative test from the NEOGEN Corp. This test has a detection range of 0.5 to 5 ppm. Samples with DON values greater than 1 ppm are considered unsuitable for human consumption.

Bake testing was conducted on eleven varieties from the 2012 growing season. Samples for testing came from individual field sites and were selected based on protein, DON, falling number levels and quantity of available grain. Each sample was milled at Gleason Grains in Bridport, VT on a Meadows Mills Inc. stone burr mill and then sifted on a Meadows Mills Inc. bolter which produced a finely ground flower with an approximate 86% extraction rate. The bake tests were conducted by: Randy George, Red Hen Baking Company, Duxbury, VT; Jeffery Hamelman, King Arthur Flour, Norwich, VT; and Alison Pray, Standard Baking Co., Portland, ME. Each baker followed the same recipe for a naturally leavened bread and as each sample was tested the bakers used a predetermined list of criteria to score for certain characteristics from the beginning of the baking process to the final loaf.

Bakers conducting tests of flour at King Arthur Flour in VT.
Photo Erica Cummings

All data were analyzed using mixed model Analysis of Variance (ANOVA) in which replicates were considered random effects. The LSD procedure was used to detect whether differences among variety averages were statistically significant and was only conducted if the ANOVA F-test was significant ($P<0.05$) (see below for a description of a “significant difference”). There were significant differences between the locations for most parameters, so results from each location are reported independently.

What Is a Significant Difference?

Variations in yield and quality can occur not only due to genetics but also due to variability in soil, weather, and other growing conditions. Statistical analysis makes it possible to determine whether a difference between two varieties is real or whether it might have occurred due to other variability in the field. The Least Significant Difference (LSD) is the minimum difference needed between two averages to consider them statistically different. LSDs at the 5% level of probability are presented at the bottom of each table for each measure. Where the difference between two varieties within a column is equal to or greater than the LSD value, you can be sure in 19 out of 20 chances that there is a real difference between the two varieties.

In the example below, variety A is significantly different from variety C because the difference between their yields (1454) is greater than the LSD value (889). Variety A is not significantly different from variety B because the difference between their yields (725) is less than the LSD value (889).

Throughout this bulletin, the greatest value at each site for each measure is indicated with an underline and bold type. Varieties that are not significantly different from the greatest value are also in bold type. Using the example below, variety C had the highest measured yield (underlined and bolded) but it was not significantly different than the yield of variety B (bolded).

Example Table

Variety	Yield
A	3161
B	**3886**
C	**4615**
LSD	889

RESULTS

Growth and Development

Weather played a very important role in the growth, development, and production of spring wheat over the four years of trials. Warm, dry weather conditions in April and May in 2010 and 2012 allowed for early planting at all locations, which supported good early growth, limited weed pressure, and good to excellent yields and overall quality. In 2011, high precipitation levels in early spring led to late planting and resulted in moderate to severe issues with weed pressure, yields, and quality, especially at the Alburgh, VT and Willsboro, NY sites. In 2013, dry weather from mid-April to mid-May allowed for timely planting at all sites, but extreme moisture conditions starting in mid-May and persisting into early July during the critical early growth stages of wheat led to below average yields and high DON levels, with the Presque Isle, ME site being the exception.

Flowering generally occurred during the third and fourth week of June in each year, except in 2011 and at the Presque Isle, ME site in 2013 (Table 4). In these cases, later planting delayed flowering. Across all sites and years, Brick, and Roblin were the earliest varieties to flower, whereas AC Walton and Red Fife were among the latest.

Over the four years of trialing, plant heights ranged from 28 to 43 inches (Table 4). AC Walton, Kaffé, Megantic, and Red Fife were the tallest varieties, while Sy Rowyn, Ada, Jenna, and Sy Soren were the shortest.

Lodging was moderate in the first three years with Sabin, Helios lodging in Alburgh, VT in 2011 and Red Fife lodging in Old Town, ME in 2011. In 2013, the VT and NY sites experienced more lodging issues and the varieties that lodged were Red Fife, McKenzie, Megantic, Prosper, Yorkton, Superb, Faller, Kaffé, and Sy Rowyn. At the Sidney, ME site that year, three varieties lodged, Red Fife, Advance, and RB07.

Weed pressure was generally low at the ME sites and did not cause yield or quality problems except at the Sidney location in 2013 where weeds likely contributed to lower yield. Weed pressure was severe at the Alburgh, VT site in 2010 and 2013, and the Willsboro, NY site in 2013. In 2011 and 2013, the NY site also experienced extensive damage from wild turkeys.

Grain Yield

A typical yield for organic hard red spring wheat grown in Northern New England is about 2,000 lbs per acre (Matt Williams, personal communication, 2011). Yields over the four years of these trials were variable (Table 5). At the ME sites, the average yield across varieties met or exceeded the regional average in all years except in 2013 in Sidney. In contrast, yields were well below the regional average at the Alburgh, VT site in 2010 and 2011 but exceeded or met this average in 2012 and 2013. In Willsboro, NY yields were equal or above average in 2010 and 2012 but below average in 2011 and 2013. Across all sites and years, Faller, Jenna, Magog, and Tom have been consistently among the highest yielding varieties, whereas AC Barrie and Red Fife have been among the lowest yielding varieties.

Harvesting plots in Old Town, ME.
Photo Ellen Mallory

Grain Quality

Commercial mills use a variety of measurements to determine if a particular lot of wheat is suitable for bread flour, including grain protein, test weight, falling number, and mycotoxin (DON) concentration.

Grain protein levels varied considerably among years, with all sites producing their highest protein levels in 2010 and most sites experiencing their lowest protein levels in 2011 (Table 6). Site averages ranged from lows of 11.3% and 11.5% at the 2011 Old Town, ME and 2013 Presque Isle ME sites, respectively, to highs of 15.3%, 15.6%, and 15.7% at the 2010 Alburgh, VT, 2010 Willsboro, NY, and 2010 Old Town, ME

sites, respectively. Among the varieties, AC Barrie, Glenn, Roblin, and the new variety Yorkton have consistently produced among the highest protein levels over the four years of trialing, whereas Faller, FBC Dylan, and Kaffé have consistently ranked low for grain protein.

The standard test weight for hard red spring wheat is 58 lbs per bushel, with an acceptable range of 56-60 lbs per bushel. Most varieties had adequate to good test weights for the first three years of the trial, although in 2011 test weights were on the lower end of the acceptable range (Table 7). However, in 2013, while most varieties at the Presque Isle, ME site tested above 60 lbs per bushel, most of the varieties at the Sidney, ME and Alburgh, VT locations tested below the acceptable level. (Test weight was not measured at the Willsboro, NY site in 2013.) Varieties that consistently demonstrated relatively high test weights across locations included Barlow, Faller, Glenn, Jenna, Oklee, and Tom, whereas AC Barrie, AC Walton, Red Fife, and Roblin tended to produce low test weights.

Falling number values were well above the acceptable level (250 seconds) in almost all cases. Exceptions include Jenna, Kaffé, and Roblin, which tested below 250 seconds in 2011 and 2013 for at least one site (Table 8). However, these trials are not the best indicator of each variety's susceptibility to pre-harvest sprouting because of our method of harvesting, which required us to harvest all varieties at the same time and therefore wait to harvest until the latest maturing variety threshed free in hand tests. This may have put early maturing varieties like Roblin at greater risk for pre-harvest sprouting and low falling number values than later maturing varieties.

Fusarium head blight, which produces the mycotoxin deoxynivalenol (DON), is a disease of major concern for wheat growers in northern New England. It primarily infects the plant during flowering and is favored by cool, humid weather. The United States Food and Drug Administration has established a maximum DON guideline of 1 ppm for finished human products. Millers may accept grain with slightly higher DON levels because, through cleaning, they can remove some of the infected grain and reduce DON levels.

DON levels were quite variable among sites and years (see Table 9). In ME, the Old Town and Sidney locations experienced average DON levels above 1 ppm in five of the seven site years, while the 2013 Presque Isle site had very low DON levels with only one variety testing above 1 ppm (Red Fife). At the Alburgh, VT site, average DON levels were above 1 ppm for two of the four years, while at Willsboro, NY DON levels exceeded 1 ppm in only one year (2013). Some varieties were dropped from the trialing program due to unacceptably high DON levels, specifically Batiscan, Cabernet, Kelse, and Malbec. Other varieties that have showed relatively high DON levels include Barlow, Jenna, McKenzie, Steele, Superb, and Ulen. The varieties that have consistently shown the lowest DON levels are AC Barrie, Brick, Glenn, Magog, Tom, and Yorkton.

Baking Quality

The three bakers found that all of the spring wheat samples that they tested had satisfactory to excellent baking characteristics and produced bread loaves that they would be comfortable selling in their bakeries. The varieties tested were Barlow, Faller, Glenn, Magog, McKenzie, RB07, Red Fife, Roblin,

Sy Soren, Tom, and Yorkton (Table 10). Glenn and Faller produced the best overall results in this testing, while Red Fife, Tom, and Yorkton were found to have some deficiencies. The samples used for the tests had a range of protein levels from 12.8 to 13.8%. Within this range, the bakers noted that higher protein did not necessarily equate with better baking quality. However, they did remark that these samples of spring wheat had higher overall protein levels and baking performance than winter wheat samples they had trialed in 2012.

Bread made with spring wheat flour. Photo Erica Cummings

DISCUSSION

Wheat grain sold for bread flour can receive up to twice the pay price as grain sold for livestock feed in New England, but the grain must meet higher quality standards. Therefore, when choosing varieties, it is important to consider their potential to produce grain with acceptable protein, test weight, falling number, DON levels, and baking performance, as well as their ability to produce high yields.

There is often a tradeoff between yield potential and protein potential. For instance Faller had impressive yields over the four years of these trials, but also had among the lowest protein levels. In contrast, Roblin, Glenn, and Yorktown produced lower than average yields, but consistently had among the highest protein levels. A number of varieties tested in these trials have produced average or above-average yields and also maintained adequate protein levels. These varieties include Jenna, Oklee, RB07, Superb, and Tom.

Fusarium head blight can be a major issue in our region. Options for managing the disease in organic systems are limited and include rotating with non-grain crops (i.e., avoid planting wheat after wheat, corn, barley, and rye), incorporating any disease-carrying debris into the soil, and choosing less susceptible varieties. While none of the current wheat varieties are fully resistant to Fusarium head blight, some have better tolerance to the disease than others. In variety trials conducted in North Dakota and Minnesota where Fusarium inoculant and moisture levels were controlled to maximize disease incidence, Brick, Forefront, Glenn, and RB07 had the best tolerance to Fusarium when compared to the other varieties. In our trials, varieties that have consistently shown below average DON levels over multiple years include AC Barrie, Brick, Glenn, Magog, Tom, and Yorkton.

Choosing a more tolerant variety may provide some protection against Fusarium, but conditions at flowering drive infection and may still result in high DON levels. One management strategy is to plant multiple varieties that have different maturity dates, and hence flowering dates, to hedge against wet weather at flowering. In these trials Roblin and Brick were consistently early to flower, while AC Walton and Red Fife were the latest.

Although a limited number of varieties and samples were selected for bake testing, the results showed that as long as quality parameters such as protein, DON, falling number, and test weight are adequate, good to excellent artisanal breads can be baked from organic spring wheat grown in Northern New England. "For the most part, these flours were at least as strong as the flours we currently use in our bakery, if not more," said test baker Alison Pray of Standard Baking Company in Portland ME, "The flavors and textures, given some slight variations between the flours, were widely enjoyed by our staff. I'm confident that we could make great bread using any one of these, with some tweaks in the process."

It may be helpful to compare these ME, VT, and NY results with results from variety trails conducted in other regions. Ultimately, though, it is important to evaluate data from test sites that are similar to your farm and region when deciding which varieties to grow.

Full reports of the 2010, 2011, and 2012 results are available as separate publications at www.umaine.edu/localwheat/research/variety-trials/.

Spring wheat plots in Presque Isle, ME. Photo Ellen Mallory

March 11, 2014

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Table 1. Spring wheat varieties planted in ME, VT, and NY in 2010-2013.

Variety	Origin and Year of Release†	Year Grown 2010	2011	2012	2013
AC Barrie	AAFC‡, Saskatchewan, 1994	X	X	X	X
AC Walton	AAFC, PEI, 1995	X	X	X	X
Ada	MAES, 2006	X	X	X	
Advance	SDAES, 2011				X
Barlow	NDAES, 2009	X	X	X	X
Batiscan	Semican, Canada	X	X		
Brick	SDAES, 2000		X	X	X
Cabernet	Resource Seed, PNW, 2001	X	X		
Faller	NDAES, 2007	X	X	X	X
FBC Dylan	NPSAS/FBC, 2006	X	X	X	
ForeFront	SDAES, 2012				X
Glenn	NDAES, 2005	X	X	X	X
Helios	AAFC, Saskatchewan, 2007		X	X	
Howard	NDSU, 2006	X	X		
Jenna	Agripro Syngenta, 2009	X	X	X	X
Kaffé§	Semican, Canada		X	X	X
Kelse	WSU, 2008	X	X		
Kingsey	Semican, Canada	X	X		
Magog	Semican, Canada, 2009	X	X	X	X
Malbec	Agripro Syngenta, PNW	X	X		
McKenzie	SWP/ARD, 1997		X	X	X
Megantic	SynAgri, 2008				X
Oklee	MAES, 2003	X	X	X	
Prosper	NDAES & MAES, 2012				X
RB07	MAES, 2007	X	X	X	X
Red Fife	Heritage var., ca. 1860	X	X	X	X
Roblin	ACRS, Winnipeg, 2001	X	X	X	X
Sabin	MAES, 2009	X	X	X	
Steele	NDAES, 2004	X	X	X	
Superb	AAFC, Winnipeg, 2001	X	X	X	X
Sy Rowyn	Agripro Syngenta, 2013				X
Sy Soren	Agripro Syngenta, 2011			X	X
Tom	MAES, 2008	X	X	X	X
Ulen	MAES, 2005	X	X	X	
Yorkton#	Semican, Canada, 2013		X	X	X

†Year of release not always available,

‡Abbreviations: AAFC = Agric. & Agri-Food Canada, ACRS = Agric. Canada Rsrch. Station, FBC = Farmer Breeder Club, MAES = Minnesota Agric. Expt. Station, NDAES = North Dakota Agric. Expt. Station, NDSU = North Dakota State Univ., NPSAS = North Plains Sustainable Agric. Society, PEI = Prince Edward Island, SDAES = South Dakota Agric. Expt. Station, WSU = Washington State University SWP=Saskatchewan Wheat Pool, ARD=Agricultural Research and Development.

§ Soft white.

Formerly 07SW07

Table 2. Precipitation, temperature, and growing degree days in ME, VT, and NY in 2010-2013.†

Site and Month	Total Precipitation (in.)				30-Year Average	Average Temperature (°F)				30-Year Average	Growing Degree Days			
	2010	2011	2012	2013	1981-2010	2010	2011	2012	2013	1981-2010	2010	2011	2012	2013
Old Town, ME														
April	2.3	5.7	3.7	1.4	3.8	46	42	44	40	42	426	294	356	229
May	1.9	3.8	4.3	4.2	3.9	56	54	55	54	53	726	680	707	667
June	4.0	4.2	6.0	6.0	4.1	62	61	61	61	62	857	844	867	855
July	2.2	2.1	1.0	4.4	3.6	71	69	69	69	68	1182	1127	1114	1104
August	1.1	8.8	2.8	6.4	3.3	67	66	69	64	66	1077	1061	1096	1002
Waterville, ME														
April	3.1	4.3	3.3	2.1	3.5	48	43	46	42	43	479	340	408	305
May	1.8	4.3	3.5	5.4	3.8	58	55	57	52	54	779	723	766	677
June	4.3	1.8		5.2	4.0	64	63	63	63	64	945	930	924	981
July	2.3	3.6	0.6	4.2	3.6	72	71	72	71	69	1223	1213	1227	1168
August	3.7	6.3	3.7	6.7	3.5	69	69	71	67	68	1133	1134	1202	1088
Alburgh, VT														
April	2.6	7.9	2.6	2.1	2.82	40	47	45	44	44.8	331	465	396	348
May	3.9	8.7	3.9	4.8	3.45	45	59	61	59	56.3	396	826	884	848
June	3.2	3.5	3.2	9.2	3.69	61	67	67	64	65.8	884	1088	1046	967
July	3.8	3.7	3.8	1.9	4.16	67	74	71	72	70.6	1046	1314	1221	1235
August		10.2		2.4	3.91	71	70		68	68.8	1221	1121		1112
Willsboro, NY														
April	2.8	6.6	2.8	2.1	2.8	46	46	46	45	45	411	423	411	383
May	4.4	7.8	4.4	8.7	3.5	62	58	62	61	56	435	809	435	890
June	3.2	2.8	3.2	9.9	3.7	68	66	68	67	66	917	1064	917	1034
July	3.8	1.8	3.8	4.5	4.2	73	73	73	74	71	1072	1277	1072	1253
August	2.9	5.8	2.9	3.1	3.9	72	70	72	69	69	1271	1181	1271	1161

†Bases on National Weather Service data from cooperative observer stations in close proximity to field trials available at http://www.ncdc.noaa.gov/crn/report. Historical averages are for 30 years (1981-2010) available at http://cdo.ncdc.gov/cgi-bin/climatenormals.pl.

‡ Monthly averages not available due to missing data points.

Base 32°F

Table 3. Plot management for the spring wheat variety trials in ME, VT, and NY in 2010-2013.

	Trial Location			
	Old Town or Presque Isle, ME†	**Sidney, ME**	**Alburgh, VT**	**Willsboro, NY**
Soil type				
2010	Suffield silt loam	Buxton silt loam	Benson rocky silt loam	Kingsbury silt clay loam
2011	Buxton silt loam			
2012	Stetson fine sandy loam			
2013	Caribou gravelly loam			
Previous crop				
2010	Soybeans	Silage corn	Grass sod	Soybeans
2011	Silage corn	High moisture ear corn	Winter wheat	Timothy/alfalfa sod
2011	Silage corn	High moisture ear corn	Sunflowers/grass sod	Winter wheat
2013	Potato	High moisture ear corn	Silage corn	Winter wheat
Pre-plant fertility source (rates are per acre)				
2010	Solid dairy manure 21 ton	Liquid dairy manure 5333 gal	Grass sod plow down	Soybeans
2011	Solid dairy manure 24 ton	Liquid dairy manure 6900 gal	Poultry manure (2-3-2) 2 ton	3-yr Timothy/Alfalfa sod
2012	Solid dairy manure 25 ton	Solid dairy manure 20 ton	Grass sod plow down	3-yr Timothy/Alfalfa sod
2013	Chicken manure 3-4 ton	Solid dairy manure 28 ton	None	3-yr Timothy/Alfalfa sod
Topdress nitrogen (rates are per acre)				
2010	None	None	None	None
2011	None	None	Pro-Gro, 50 lb N	None
2012	Chilean nitrate, 16 lb N	None	None	None
2013	None	None	None	None
Planting date				
2010	26-Apr	15-Apr	21-Apr	26-Apr
2011	9-May	3-May	2-May	13-May
2012	12-Apr	14-Apr	6-Apr	13-Apr
2013	13-May	2-May	22-Apr	23-Apr
Harvest date				
2010	6-Aug	30-Jul	30-Jul	2-Aug
2011	19-Aug	12-Aug	17-Aug	19-Aug
2012	7-Aug	31-Jul	31-Jul	8-Aug
2013	29-Aug	15-Aug	5-Aug	16-Aug

† Trial location was in Presque Isle Me. In 2013

Table 4. Relative flowering time Flowering and plant height of spring wheat grown in ME, VT, and NY in 2010-2013.

	Relative Flowering Date	Plant Height (in)
AC Barrie	Medium	37
AC Walton	Late	40
Ada	Medium	29
Advance	Medium	31
Barlow	Medium	34
Brick	Early	36
Faller	Medium	33
FBC Dylan	Medium	33
Forefront	Medium	38
Glenn	Medium	35
Helios	Medium	36
Jenna	Medium	29
Kaffé	Medium	40
Magog	Medium	38
McKenzie	Medium	38
Megantic	Medium	43
Oklee	Medium	31
Prosper	Medium	34
RB07	Medium	30
Red Fife	Late	43
Roblin	Early	36
Sabin	Medium	31
Steele	Medium	32
Superb	Medium	33
Sy Rowyn	Medium	29
Sy Soren	Medium	28
Tom	Medium	32
Ulen	Medium	31
Yorkton‡	Medium	36

‡ Formerly 07SW04

Table 5. Yield of spring wheat grown in ME, VT, and NY in 2010-2013.

Yield at 13.5% moisture (lbs/acre)																				
	Old Town or Presque Isle†, ME					Sidney, ME					Alburgh, VT					Willsboro, NY				
	2010	2011	2012	2013†	Average	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average
AC Barrie	2077	2578	3796	2952	2851	1987	2606	2221	956	1943	845	711	3022	1090	1417	1864	736	2755	413	1442
AC Walton	2699	2736	**4919**	---	3451	---	3001	2377	---	2201	1222	847	3339	**2783**	2048	**2872**	534	**3669**	539	1903
Ada	2098	2917	---	---	2508	2382	3030	---	---	2706	1011	992	**3733**	---	1912	2215	**1579**	3488	---	2427
Advance	---	---	---	**3857**	3857	---	---	---	1553	1553	---	---	---	2046	2046	---	---	---	1322	1322
Barlow	---	**2922**	4324	**3401**	3549	---	**3170**	**2530**	1710	2470	---	978	3609	1819	2135	---	**1604**	**3989**	**1987**	2527
Brick	---	2748	4450	3212	3470	---	2763	2143	1615	2174	---	**1102**	3578	**2363**	2348	---	**1744**	**3582**	**2047**	2458
Faller	**3575**	**3221**	**5086**	**3427**	3827	**3260**	**3653**	2166	**1878**	2739	**1580**	965	**3998**	**2503**	2262	**3235**	**1634**	**3981**	**1865**	2679
FBC Dylan	2987	2900	**4588**	---	3492	2566	2945	**2587**	---	2699	1286	796	3168	---	1750	2202	1101	3227	---	2177
Forefront	---	---	---	3169	3169	---	---	---	**1950**	1950	---	---	---	**2404**	2404	---	---	---	**2314**	2314
Glenn	2334	2644	3948	3255	3045	2200	2695	1860	1434	2047	1063	730	3260	1474	1632	2001	**1863**	**3864**	1413	2285
Helios	---	---	---	---	---	---	---	---	---	---	1148	**1353**	3156	---	1886	2016	1165	**3976**	---	2386
Jenna	---	**3338**	**4781**	**3848**	3989	---	**3355**	**2861**	1602	2606	---	**1168**	**3865**	**2341**	2458	---	**1437**	3453	**1547**	2146
Kaffé§	---	---	---	---	---	---	---	---	---	---	**2009**	**1307**	**3919**	1630	2216	2653	1153	**3568**	959	2083
Magog	2396	2695	**4779**	**3969**	3460	**2765**	**3257**	**2849**	1090	2490	1281	**1013**	**4048**	2032	2093	2582	500	3351	677	1777
McKenzie	---	2218	4135	---	3177	---	2508	2127	---	2318	1146	847	2191	1062	1311	2527	**1593**	3472	**1738**	2332
Megantic	---	---	---	---	---	---	---	---	---	---	---	---	---	1375	1375	---	---	---	1005	1005
Oklee	**3353**	**3134**	4361	---	3616	**2943**	2771	2291	---	2668	1130	813	3131	---	1691	2147	1190	2757	---	2031
Prosper	---	---	---	**4044**	4044	---	---	---	1714	1714	---	---	---	1919	1919	---	---	---	**2143**	2143
RB07	2766	**3047**	4115	**3419**	3337	2716	**3281**	2303	1576	2469	1113	695	**3776**	2132	1929	2136	**1526**	**3774**	1339	2194
Red Fife	2036	2278	3368	2279	2490	1993	2529	2119	1347	1997	1083	788	2604	1057	1383	2325	477	2937	453	1548
Roblin	2523	2289	3921	2495	2807	2071	2793	2065	1600	2132	1097	758	3026	1416	1574	1838	686	3455	954	1733
Sabin	2986	2692	4393	---	3357	**2920**	3058	1911	---	2630	1247	940	2666	---	1618	2599	863	2882	---	2115
Steele	2829	2759	**4653**	---	3414	2643	**3110**	1777	---	2510	1222	749	3367	---	1779	2183	882	3260	---	2108
Superb	3168	2650	4440	---	3419	**2807**	2996	2190	---	2664	1297	**1226**	3658	1661	1961	2429	**1536**	3363	1129	2114
Sy Rowyn	---	---	---	**3762**	3762	---	---	---	**1824**	1824	---	---	---	**2563**	2563	---	---	---	**1693**	1693
Sy Soren	---	---	---	**3565**	3565	---	---	---	1719	1719	---	---	**4294**	2007	3151	---	---	**3513**	**1485**	2499
Tom	**3684**	**3087**	4488	**3462**	3680	**3050**	**3179**	**3082**	**1992**	2826	1298	**1267**	**4159**	**2304**	2257	1980	**1627**	**3600**	1296	2126
Ulen	2969	2816	4358	---	3381	2679	2755	2142	---	2525	1277	900	**3755**	---	1977	1916	**1532**	2817	---	2088
Yorkton‡	---	2560	3963	2755	3093	---	2502	2140	1224	1955	---	799	3592	1582	1991	---	933	3263	482	1559
Site Average	2780	2773	4343	3366	3316	2599	2950	2287	1580	2354	1229	945	3402	1886	1866	2301	1213	3423	862	1950
LSD (0.05)	453	417	588	730	---	515	561	661	262	---	473	359	592	628	---	352	525	489	1308	---

†The trial was located in Old Town in 2010-2012 and in Presque Isle in 2013.

‡ Formerly 07SW04

Table 6. Protein concentration of spring wheat grown in ME, VT, and NY in 2010-2013.

Protein at 12% moisture (%)																				
	Old Town or Presque Isle†, ME					Sidney, ME					Alburgh, VT					Willsboro, NY				
	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average
AC Barrie	**16.0**	11.6	14.0	11.4	13.2	**14.5**	**13.1**	**14.3**	**17.2**	14.8	16.8	13.3	**15.1**	**17.1**	15.6	16.1	15.3	12.7	**16.5**	15.2
AC Walton	15.6	10.9	10.8	---	12.4	---	11.0	12.1	---	11.6	15.7	12.3	13.8	14.8	14.2	13.7	15.5	12.1	14.9	14.0
Ada	**16.0**	11.4	---	---	13.7	12.6	**13.3**	---	---	13.0	14.6	12.3	13.0	---	13.3	15.0	14.2	12.5	---	13.9
Advance	---	---	---	11.5	11.5	---	---	---	12.0	12.0	---	---	---	14.5	14.5	---	---	---	13.6	13.6
Barlow	---	11.3	13.0	11.8	12.0	---	**13.5**	13.4	14.4	13.8	---	13.0	14.1	15.3	14.1	---	15.3	12.9	14.2	14.1
Brick	---	10.5	13.2	11.6	11.8	---	12.1	13.0	13.6	12.9	---	**13.8**	14.0	14.7	14.2	---	15.5	12.7	14.9	14.4
Faller	14.9	10.8	10.9	10.6	11.8	12.2	11.0	11.4	12.9	11.9	14.4	11.0	12.9	14.7	13.3	14.4	13.9	11.4	15.4	13.8
FBC Dylan	14.6	10.5	12.3	---	12.5	11.7	11.2	11.3	---	11.4	13.8	12.3	13.6	---	13.2	14.1	13.8	11.4	---	13.1
Forefront	---	---	---	11.0	11.0	---	---	---	14.0	14.0	---	---	---	14.3	14.3	---	---	---	14.3	14.3
Glenn	**16.4**	12.0	**14.7**	11.4	13.6	**15.4**	**13.8**	**13.8**	14.3	14.3	16.0	12.5	14.9	**16.4**	14.9	17.0	15.6	14.1	14.1	15.2
Helios	---	---	---	---	---	---	---	---		---	16.0	**13.8**	14.3	---	14.7	17.3	14.3	12.6	---	14.7
Jenna	---	10.9	13.3	**12.5**	12.2	---	11.7	13.0	13.1	12.6	---	13.0	13.9	14.3	13.7	---	13.9	11.7	14.5	13.4
Kaffé§	---	---	---	---	---	---	---	---	---	---	13.7	11.3	12.0	14.3	12.8	14.2	12.9	11.1	14.5	13.2
Magog	15.6	10.5	11.9	9.7	11.9	12.6	12.1	12.7	15.4	13.2	15.9	13.0	13.1	15.1	14.3	14.9	15.0	12.6	15.3	14.5
McKenzie	---	10.9	12.7	---	11.8	---	11.8	12.2	---	12.0	15.3	11.8	13.1	15.6	13.9	15.3	14.7	11.9	15.1	14.3
Megantic	---	---	---	---	---	---	---	---	---	---	---	---	---	15.9	15.9	---	---	---	15.7	15.7
Oklee	**15.7**	11.5	13.7	---	13.6	12.5	12.6	13.7	---	12.9	15.6	13.5	14.6	---	14.6	16.1	14.8	12.9	---	14.6
Prosper	---	---	---	10.8	10.8	---	---	---	10.6	10.6	---	---	---	14.7	14.7	---	---	---	14.8	14.8
RB07	**15.8**	11.4	13.4	12.2	13.2	**14.3**	12.7	13.1	14.3	13.6	15.2	12.5	13.7	14.7	14.0	15.8	14.3	12.3	13.9	14.1
Red Fife	**16.4**	**12.2**	11.2	10.4	12.5	**14.2**	12.4	12.2	12.5	12.8	16.2	12.8	13.6	14.9	14.4	15.3	14.4	12.5	14.3	14.1
Roblin	**16.6**	**12.8**	**15.3**	**13.4**	14.5	**14.8**	**13.5**	**13.9**	14.9	14.3	16.0	**15.0**	**15.7**	15.9	15.7	**18.0**	**15.8**	**15.1**	**16.3**	16.3
Sabin	**15.7**	10.9	12.3	---	13.0	12.0	11.9	12.1	---	12.0	**16.9**	13.0	13.6	---	14.5	14.7	14.5	11.6	---	13.6
Steele	**15.8**	11.7	13.7	---	13.7	13.7	12.6	12.6	---	13.0	15.2	13.3	13.9	---	14.1	16.2	15.2	12.4	---	14.6
Superb	**16.0**	11.7	13.4	---	13.7	13.4	13.0	12.6	---	13.0	15.0	13.5	13.4	16.1	14.5	16.0	14.5	13.0	15.5	14.8
Sy Rowyn	---	---	---	12.1	12.1	---	---	---	12.6	12.6	---	---	---	13.9	13.9	---	---	---	14.6	14.6
Sy Soren	---	---	---	12.4	12.4	---	---	---	14.3	14.3	---	---	14.1	15.5	14.8	---	---	13.3	15.4	14.3
Tom	14.6	10.7	13.8	10.7	12.5	13.2	**13.1**	12.7	12.9	13.0	13.6	13.3	14.4	15.0	14.1	15.6	14.7	12.7	13.3	14.1
Ulen	**16.0**	11.9	**14.6**	---	14.2	**14.4**	**13.2**	13.5	---	13.7	15.3	13.0	14.1	---	14.1	16.7	14.6	12.3	---	14.5
Yorkton‡	---	11.7	14.1	12.0	12.6	---	**13.6**	**14.7**	**17.8**	15.4	---	13.3	**15.0**	**16.4**	14.9	---	**16.6**	**14.3**	**17.1**	16.0
Site Average	15.7	11.3	13.1	11.5	12.9	13.4	12.5	12.9	14.0	13.2	15.3	12.9	13.9	15.0	14.3	15.6	14.8	12.6	15.0	14.5
LSD (0.05)	0.8	0.6	1.0	0.8	---	1.4	0.8	1.0	1.0	---	---	1.3	0.8	1.0	---	---	0.8	0.8	0.9	---

†The trial was located in Old Town in 2010-2012 and in Presque Isle in 2013.

‡ Formerly 07SW04

Table 7. Test weight of spring wheat grown in ME, VT, and NY in 2010-2013.

Test Weight (lbs/bu)																			
	Old Town or Presque Isle†, ME					Sidney, ME					Alburgh, VT					Willsboro, NY			
	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average	2010	2011	2012	2013	Average	2010	2011	2012	Average
AC Barrie	57	56	61	60	58	59	**58**	**59**	51	57	**55**	55	61	**57**	57	55	57	**59**	57
AC Walton	54	53	60	---	56	---	56	54	---	55	52	55	57	53	54	54	56	57	56
Ada	57	**58**	---	---	58	**60**	**58**	---	---	59	**56**	56	62	---	58	**60**	57	**60**	59
Advance	---	---	---	**61**	61	---	---	---	52	52	---	---	---	**57**	57	---	---	---	---
Barlow	---	**58**	**64**	**61**	61	---	**59**	**60**	**55**	58	---	56	61	**58**	58	---	57	**60**	59
Brick	---	**58**	63	**61**	61	---	**59**	**60**	**54**	58	---	55	62	**57**	58	---	57	**59**	58
Faller	**59**	57	62	60	59	59	57	58	**53**	57	**56**	55	61	56	57	57	56	58	57
FBC Dylan	**59**	56	62		59	59	**58**	**59**		59	**56**	56	61	---	58	57	57	59	58
Forefront	---	---	---	60	60	---	---	---	**54**	54	---	---	---	**57**	57	---	---	---	---
Glenn	**60**	**59**	**64**	61	61	**61**	**59**	**60**	**55**	59	**55**	56	**64**	56	58	**59**	58	**60**	59
Helios	---	---	---	---	---	---	---	---	---	---	**55**	56	60	---	57	57	58	58	58
Jenna	---	55	61	60	59	---	56	57	51	55	---	56	61	54	57	---	57	58	58
Kaffé§	---	---	---	---	---	---	---	---	---	---	**56**	56	60	54	56	**58**	57	57	57
Magog	56	56	61	60	58	59	57	58	50	56	53	56	61	56	56	54	55	**59**	56
McKenzie	---	57	61	---	59	---	57	58	---	58	**56**	55	61	55	57	**58**	57	57	57
Megantic	---	---	---	---	---	---	---	---	---	---	---	---	---	**59**	59	---	---	---	---
Oklee	**59**	**58**	63	---	60	**60**	**59**	**59**	---	59	**56**	56	61	---	58	**58**	57	58	58
Prosper	---	---	---	60	60	---	---	---	53	53	---	---	---	54	54	---	---	---	---
RB07	56	56	61	61	58	58	57	**59**	49	56	**57**	55	60	55	57	**58**	58	57	58
Red Fife	57	55	60	---	57	57	56	54	52	55	51	56	61	53	55	50	55	**59**	55
Roblin	56	54	60	59	57	58	56	58	50	56	51	55	59	55	55	56	57	58	57
Sabin	57	57	61	---	58	58	**58**	58	---	58	**55**	56	59	---	57	57	57	57	57
Steele	**59**	56	62	---	59	59	**58**	58	---	58	**56**	56	62	---	58	**58**	57	58	58
Superb	57	55	60	---	57	**60**	57	58	---	58	53	55	61	55	56	56	57	58	57
Sy Rowyn	---	---	---	61	61	---	---	---	52	52	---	---	---	**57**	57	---	---	---	---
Sy Soren	---	---	---	61	61	---	---	---	**54**	54	---	---	62	56	59	---	---	**59**	59
Tom	**59**	**58**	62	61	60	**60**	**58**	**59**	**54**	58	**58**	56	62	56	58	**58**	58	**59**	58
Ulen	57	56	60	---	58	59	57	58	---	58	**57**	55	61	---	58	57	57	59	58
Yorkton‡	---	---	61	60	60	---	**58**	**59**	52	56	---	55	61	55	57	---	57	59	58
Site Average	57	56	61	60	59	59	57	58	52	57	53	55	61	56	56	57	57	58	57
LSD (0.05)	1	0.7	0.5	0.5	---	1	0.8	1.2	1.4	---	3.4	NS	0.9	1.9	---	1.4	1.4	1.3	---

†The trial was located in Old Town in 2010-2012 and in Presque Isle in 2013.

‡ Formerly 07SW04

Table 8. Falling number of spring wheat grown in ME, VT, and NY in 2010-2013.

Falling Number at 14% Moisture (seconds)													
	Old Town or Presque Isle†, ME			Sidney, ME		Alburgh, VT				Willsboro, NY			
	2010	2011	2012	2011	2012	2010	2011	2012	2013	2010	2011	2012	2013
AC Barrie	464	358	491	417	461	394	379	453	396	461	441	447	339
AC Walton	409	368	444	364	430	357	312	434	361	362	386	431	313
Ada	532	366	---	419	---	404	409	464	---	448	473	481	---
Advance	---	---	---	---	---	---	---	---	275	---	---	---	313
Barlow	---	261	398	372	371	---	305	399	261	---	390	395	322
Brick	---	326	423	385	437	---	282	410	326	---	353	357	343
Faller	413	358	453	371	440	341	332	432	344	358	393	417	333
FBC Dylan	502	306	456	343	486	403	345	479	---	435	460	476	---
Forefront	---	---	---	---	---	---	---	408	314	---	---	440	346
Glenn	388	329	422	401	403	334	323	379	282	335	386	393	333
Helios	---	---	---	---	---	414	384	485	---	461	473	465	---
Jenna	---	290	472	360	411	---	232	422	262	---	401	371	289
Kaffé§	---	---	---	---	---	288	235	374	297	334	233	322	117
Magog	511	388	520	471	520	384	362	464	394	419	432	474	347
McKenzie	---	360	470	401	442	377	375	421	345	379	412	407	362
Megantic		---	---	---	---	---	---	---	393	---	---	---	347
Oklee	478	319	474	374	475	362	310	425	---	408	387	432	---
Prosper	---	---	---	---	---	---	---	---	326	---	---	---	344
RB07	408	330	394	300	421	344	298	401	276	380	398	377	305
Red Fife	392	317	372	333	383	305	300	377	253	327	359	359	251
Roblin	403	210	467	268	434	358	265	389	344	400	381	382	282
Sabin	383	389	458	478	496	351	332	468	---	428	437	483	---
Steele	414	293	392	399	423	319	310	410	---	371	378	408	---
Superb	440	358	395	400	501	345	343	433	309	398	415	400	320
Sy Rowyn	---	---	---	---	---	---	---	---	391	---	---	---	360
Sy Soren	---	---	---	---	---	---	---	432	318	---	---	430	347
Tom	469	374	445	480	449	381	380	450	403	434	445	448	361
Ulen	367	264	295	335	340	288	372	393	---	317	372	375	---
Yorkton‡	---	391	479	444	500	---	413	461	392	---	431	462	343

†The trial was located in Old Town in 2010-2012 and in Presque Isle in 2013.

‡ Formerly 07SW04

Table 9. Levels of the deoxynivalenol mycotoxin (DON) in spring wheat grown in ME, VT, and NY in 2010-2013.

DON (ppm)																
	Old Town or Presque Isle†, ME				Sidney, ME				Alburgh, VT				Willsboro, NY			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
AC Barrie	0.8	2.2	<	<	<	<	0.5	4.5	3.3	<	<	3.7	<	<	<	1.4
AC Walton	2.6	1.7	1.4	---	---	<	1.5	---	2.1	<	<	5.5	<	<	<	1.4
Ada	1.6	4.1	---	---	0.6	1.0	---	---	3.3	<	<	---	0.8	<	<	---
Advance	---	---	---	<	---	---	---	4.7	---	---	---	5.2	---	---	---	1.9
Barlow	---	3.4	1.0	<	---	1.5	1.1	5.0	---	<	0.6	5.0	---	<	<	2.0
Brick	---	1.8	0.6	<	---	0.7	<	3.6	---	<	<	6.2	---	<	<	2.0
Faller	1.0	1.8	0.5	<	0.6	0.5	0.6	7.0	2.3	<	<	3.6	0.7	<	<	1.8
FBC Dylan	0.5	4.1	0.7	---	<	0.6	0.6	---	2.8	<	0.6	---	0.6	<	<	
Forefront	---	---	---	<	---	---	---	4.2	---	---	---	4.2	---	---	---	1.5
Glenn	<	1.8	0.7	<	<	0.6	0.8	4.1	2.0	<	<	6.1	0.6	<	0.6	1.4
Helios	---	---	---	---	---	---	---	---	2.3	<	<	---	0.6	<	<	---
Jenna	---	4.2	1.6	0.8	---	1.0	4.0	3.4	---	<	<	6.0	---	<	<	2.6
Kaffé§	---	---	---	---	---	---	---	---	4.1	<	<	8.0	*	<	<	2.7
Magog	1.3	1.7	0.7	<	0.5	<	1.0	5.0	3.1	<	<	4.9	*	<	<	1.0
McKenzie	---	1.5	1.5	---	---	<	1.9	---	2.2	<	<	4.0	0.5	<	<	1.9
Megantic	---	---	---	---	---	---	---	---	---	---	---	2.8	---	---	---	1.5
Oklee	1.0	4.1	1.1	---	<	0.8	0.9	---	3.8	0.5	0.7	---	0.9	<	<	---
Prosper	---	---	---	<	---	---	---	2.8	---	---	---	5.2	---	---	---	1.8
RB07	0.8	3.6	0.7	<	0.6	0.7	0.5	7.4	2.4	<	0.6	3.6	0.6	<	0.5	1.3
Red Fife	<	1.5	1.5	5.3	<	1.1	1.5	4.5	2.1	<	<	4.1	*	<	<	1.6
Roblin	0.7	3.8	0.5	<	<	0.8	0.5	6.5	2.3	0.6	0.5	8.5	*	<	<	4.1
Sabin	<	1.1	<	---	<	0.5	<	---	1.6	<	<	---	*	<	<	---
Steele	1.2	3.9	1.5	---	0.5	1.1	2.7	---	3.4	<	0.6	---	1.3	<	<	---
Superb	1.9	5.1	4.2	---	0.7	2.0	2.6	---	4.9	<	0.7	7.0	2.1	<	<	2.4
Sy Rowyn	---	---	---	<	---	---	---	2.2	---	---	---	3.2	---	---	---	1.2
Sy Soren	---	---	---	<	---	---	---	3.7	---	---	<	4.9	---	---	<	1.3
Tom	1.2	2.4	0.7	<	<	<	0.7	4.8	1.7	<	<	4.1	0.8	<	<	1.3
Ulen	2.5	4.4	1.7	---	0.5	0.9	2.1	---	3.1	<	0.7	---	0.7	<	<	---
Yorkton‡	---	1.3	0.5	<	---	<	<	3.5	---	<	<	3.8	---	<	<	0.9
Site Average	1.1	2.8	1.1	0.5	<	0.8	1.2	4.5	2.8	<	<	5.0	0.7	<	<	1.8

†The trial was located in Old Town in 2010-2012 and in Presque Isle in 2013.

‡ Formerly 07SW04

< = < 0.05

Table 10. Bake test results for select spring wheat varieties grown in ME, VT, and NY in 2012.

Variety	Flour quality characteristics			Baking Performance
	Protein† (%)	Test wt (lbs/bu)	Falling Number (seconds)	(Notes from test bakers)
Barlow	13.0	64	398	Great bread
BR07	13.4	61	394	Great bread
Faller	12.9	61	432	Strong, excellent volume, great flavor
Glenn	14.8	64	422	Excellent volume, great crumb
Magog	13.1	61	464	Excellent crumb and volume, good flavor
McKenzie	13.1	61	421	Good flavor, not great crumb
RB07	13.4	61	394	Great bread
Red Fife	13.6	61	377	Slightly lower volume, less than perfect texture
Roblin	15.3	60	467	Great bread
Sy Soren	14.1	62	432	Not great crumb and flavor
Tom	13.8	62	445	Low volume, overly extensible as dough
Yorkton	14.1	62	479	Slightly lower volume, good flavor

† 12% moisture